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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/579,194	05/12/2006	Moo-Seok Lee	3254-0137PUS1	6707

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EXAMINER	
MENON, KRISHNAN S	

ART UNIT	PAPER NUMBER
1797	

NOTIFICATION DATE	DELIVERY MODE
11/18/2008	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

Office Action Summary	Application No.	Applicant(s)	
	10/579,194	LEE ET AL.	
	Examiner	Art Unit	
	Krishnan S. Menon	1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 May 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-11* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *5/12/06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claims 1-11 are pending as originally filed

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-11 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-13 of copending Application No. 10/593,480. Although the conflicting claims are not identical, they are not patentably distinct from each other because claims of the reference application recites all the limitations of the instant claims

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 2-6 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 2 recites an upper support tube whose opposite ends are connected *vertically* to the upper ends of the module headers .., a lower support tube ...connected *vertically* to the lower ends of the module headers ..., and two diffusion tubes which are *vertically* connected to the support tubes ...

The problem is, the upper support tube the lower support tube and the air diffusion tube all together cannot be "connected vertically" - either the air diffusion tube or the support tubes have to be horizontal for the inter-connections to be possible.

Claims 3(1), 5(1), and 6(1) (claims as depending from claim 1) have no antecedent basis – the air diffusion tubes as recited in these claims have antecedent basis only in claim 2.

Claim Rejections - 35 USC § 103

1. Claims 1-6 and 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyashita et al (US 6,328,886) and/or Cote et al (US 2002/0139748)

Miyashita teaches hollow fiber membranes arranged between and potted into filtrate headers as claimed – see the figures. This reference also teaches the inter-

connecting air diffuser unit 104 – see the figures. The module headers are spaced apart as recited in the claim 1; the air diffusion unit has support tubes and diffusion tubes, but it is unclear form the figures of the reference if the support tubes of the air diffusion unit is physically attached to the module headers (figs 2A, 26, 27, etc). However, such attachments would be within the design skills of one of ordinary skill in the art, and is not a patentable limitation.

It is also unclear from the reference whether the air diffuser unit has vertical air tubes blowing air in a horizontal direction as is implied in claim 2. However, the reference does teach (column 2, lines 50-55):

"In preferred embodiments of the invention, gas discharged from a gas diffuser of the assembly is discharged at a rate of from about 10 to about 150 Nm.sup.3 /m.sup.2 per horizontal cross-sectional area of the membrane assembly, at average vertical and horizontal flow velocities of from 0.01 m/sec to 1.5 m/sec."

Miyashita does not teach variable air hole sizes, hole spacing etc. However, varying the air hole sizes with largest hole farthest from inlet, etc., are well known in the art for obtaining proper air distribution. Sizes of holes, hole spacing, spacing of the diffusion tubes, etc., can be designed for proper and optimum air distribution, and are not patentable imitations, unless applicant can show otherwise.

Cote teaches a swinging air distribution system for a submerged membrane unit – see figures. The air distribution system is in the form of a frame with two horizontal and two vertical members, and has air supply inlet 42 and distribution holes 50 on the tubular frame - see fig 3. Air holes are sized with variable sizes for proper distribution

and the reference also provides some guidelines for sizing the holes - see paragraph 0047. The swing in the aerator assures that air is blown in all directions – see fig 5.

Thus the claims are obvious over the combination of these references.

2. Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyashita and Cote as applied to claim 1 above, and further in view of Hayano et al (US 4,061,821 or Brun et al (US 3,984,328).

Claims differ from the teaching of Miyashita or Cote in having braided hollow fibers with increased tensile strength. However, hollow fibers with braid reinforcement is well known as seen in Hayano or Brun, and would be obvious to one of ordinary skill to use these teachings to have stronger hollow fibers. Regarding the tensile strength of the fiber of .1 Kg, or 10 Kg, the braid supported fibers of these references inherently have such capability, unless applicant can show otherwise.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Krishnan S. Menon whose telephone number is 571-272-1143. The examiner can normally be reached on 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David R. Sample can be reached on 571-272-1376. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Krishnan S Menon/
Primary Examiner, Art Unit 1797